

Amendments to the Claims:

Please amend claims 1 and 34, all as shown below.

1. (Currently Amended) A method for shaping a surface of a workpiece, comprising:
placing the workpiece in a plasma processing chamber including an inductively-coupled plasma (ICP) torch having an outer tube to communicate a plasma gas to a distal end of the plasma torch, a coil surrounding the distal end of the outer tube, and an inner tube nested within the outer tube to communicate a reactive precursor to the distal end;
translating at least one of the workpiece and the plasma torch; and
communicating the plasma gas to the distal end;
generating a plasma discharge by ~~transferring energy from applying current from~~ a radio frequency (RF) power source to the coil to excite the plasma gas, wherein a plasma sheath is formed between the distal end and the plasma discharge; and
introducing the reactive precursor to the plasma discharge through the inner tube to generate a reactive species;
~~sustaining the plasma discharge through collisions between the excited precursor and the plasma gas;~~ and
shaping the surface of the workpiece by using the reactive species within the plasma discharge; controlling a footprint of distribution of reactive species within the plasma discharge ~~from the plasma torch~~; and
directing the plasma discharge to a target portion of the surface of the workpiece.
2. (Previously Presented) A method according to claim 1, wherein the step of shaping the surface of the workpiece comprises causing minimal or no damage to the workpiece underneath the surface.
3. (Previously Presented) A method according to claim 1, wherein the step of shaping the surface of the workpiece comprises removing material from the surface of the workpiece.
4. (Original) A method according to claim 1, further comprising:
rotating the workpiece with respect to the plasma torch.

5. (Previously Presented) A method according to claim 1, wherein the step of the plasma discharge includes directing the reactive species to the target portion.
6. (Previously Presented) A method according to claim 1, further comprising: placing the reactive precursor in a central channel of the plasma torch.
7. (Canceled)
8. (Previously Presented) A method according to claim 1, further comprising: using an argon gas as the plasma gas.
9. (Previously Presented) A method according to claim 1, further comprising: controlling the mass flow of the reactive precursor into the plasma torch.
10. (Previously Presented) A method according to claim 1, further comprising: controlling the mass flow of the reactive precursor into the plasma torch from between about 0 ml/min to about 2,000 ml/min.
11. (Previously Presented) A method according to claim 1, further comprising: controlling the mass flow of the reactive precursor into the plasma torch from between about 0 ml/min to about 50,000 ml/min.
12. (Previously Presented) A method according to claim 1, further comprising: selecting a concentration of the reactive precursor to be introduced into the plasma discharge.
13. (Canceled)
14. (Previously Presented) A method according to claim 1, further comprising: coupling the RF energy to the plasma discharge in an annular region of the plasma torch.
15. (Previously Presented) A method according to claim 1, wherein the plasma torch includes an intermediate tube arranged between the outer tube and the inner tube, the method further comprising:

introducing an auxiliary gas into the intermediate tube.

16. (Previously Presented) A method according to claim 15, further comprising:
using the auxiliary gas to keep the plasma discharge away from the inner tube.
17. (Previously Presented) A method according to claim 15, further comprising:
using the auxiliary gas to adjust the position of the plasma discharge relative to the distal end.
18. (Previously Presented) A method according to claim 1, further comprising:
controlling the size of the plasma discharge by selecting the inner diameter of an outer tube of the plasma torch.
19. (Previously Presented) A method according to claim 1, further comprising:
communicating the plasma gas to the outer tube tangentially to form a vortex.
20. (Previously Presented) A method according to claim 1, further comprising:
metering the precursor and/or the plasma gas flow in the plasma torch.
21. (Previously Presented) A method according to claim 1, further comprising:
maintaining the temperature of the plasma torch between 5,000 and 15,000 degrees C.
22. (Previously Presented) A method according to claim 1, further comprising:
producing a volatile reaction product on the surface of the workpiece.
23. (Original) A method according to claim 1, further comprising:
maintaining the processing chamber at about atmospheric pressure.
24. (Previously Presented) A method according to claim 1, further comprising:
cleaning the surface of the workpiece with the plasma torch.
25. (Previously Presented) A method according to claim 1, further comprising:

polishing the surface of the workpiece with the plasma torch.

26. (Previously Presented) A method according to claim 1, further comprising:
planarizing the surface of the workpiece with the plasma torch.
 27. (Previously Presented) A method according to claim 1, further comprising:
using a plasma torch with a multiple head to increase an etch rate of the plasma torch.
 28. (Previously Presented) A method according to claim 1, further comprising:
using the precursor to control an etch rate of the plasma torch.
 29. (Previously Presented) A method according to claim 28, wherein:
the precursor is any one of a solid, liquid, and gas.
- 30.-33. (Canceled)
34. (Currently Amended) A method for shaping an optic, comprising:
placing an optic workpiece in a plasma processing chamber including an inductively-coupled
plasma (ICP) torch having an outer tube to communicate a plasma gas to a distal end of the
~~plasma torch, a coil surrounding the distal end of the outer tube,~~ and an inner tube nested
within the outer tube to communicate a reactive precursor to the distal end;
translating at least one of the optic workpiece and the plasma torch; and
communicating the plasma gas to the distal end;
generating a plasma discharge by ~~transferring energy from applying current from~~ a radio
frequency (RF) power source to the coil to excite the plasma gas, wherein a plasma sheath is
formed between the distal end and the plasma discharge; and
introducing the reactive precursor to the plasma discharge through the inner tube to generate a
reactive species;
~~sustaining the plasma discharge through collisions between the excited precursor and the plasma
gas;~~ and
shaping the surface of the optic workpiece by using the reactive species within the plasma
discharge;

controlling a footprint of distribution of reactive species within the plasma discharge ~~from the~~
~~plasma torch;~~ and
directing the plasma discharge to a target portion of the surface of the optic workpiece.

Claims 35.-41. (Canceled)